

REMARKS

Claims 1-21 are pending. Claims 1, 8, 15, 18 and 21 are independent. Favorable reconsideration is respectfully requested.

Neither the April 13, 2004 nor the May 11, 2004 Office Actions included the initialed PTO-1449 form corresponding to the Information Disclosure Statement filed November 5, 2001. The Examiner is once again requested to send the initialed form with the next Office Action. A copy of the Information Disclosure Statement, including the PTO-1449, was enclosed with the previous response.

The rejections are the same as in the previous Office Action. That is, claims 1, 2, 4, 8, 9 and 11 were rejected under 35 U.S.C. § 103 over U.S. Patent 6,590,872 (Shiue et al.) in view of U.S. Patent 5,818,882 (Komatsu) and U.S. Patent 5,550,811 (Kaku et al.). Claims 3, 5-7, 10 and 12-14 were rejected under 35 U.S.C. § 103 over Shiue et al. in view of Komatsu and Kaku et al. and further in view of U.S. Patent 6,266,361 (Huang et al). Claims 15-18 were rejected under 35 U.S.C. § 103 over Komatsu in view of U.S. Patent 5,982,763 (Sato). Claim 19 was rejected under 35 U.S.C. § 103 over Komatsu in view of Sato and further in view of Kaku et al. Claim 21 was rejected under 35 U.S.C. § 103 over Shiue et al. in view of Komatsu and Kaku et al. and further in view of Sato.

Claim 1 is directed to a receiver for a code division multiple access (CDMA) system. The system includes a pilot symbol producing section, a frequency offset estimating section, and a local signal generating section.

In the Office Action, Shiue et al. is once again applied as the primary reference against independent claim 1 and corresponding method claim 8. That Office Action, which is substantially identical to the previous Office Action, again states that “[e]xcept [for] detailing

out the frequency offset estimating section, Shiue et al. discloses all subject matter claimed: a receiver and its methods for a code division multiple access system”

In response to Applicant’s argument pointing out that Shiue et al. is not in any way directed to a CDMA system, the Examiner, in the Supplemental Office Action dated May 11, 2004, alleged that CDMA is a hybrid of Frequency-Division Multiple Access (FDMA) and Time-Division Multiplexing/Multiple Access (TDMA). This allegation is not correct and no authority is provided to support it.

In fact, TDMA uses a combination of frequency division and time division to provide multiple access to a small allotment of frequencies. On the other hand, CDMA uses a combination of frequency division and *code division* (not time division) to provide such access. The two modulation schemes are very different.

In TDMA, the total allotted bandwidth is divided into frequency channels. The channels are then *divided into a number of time slots*. Each user is allocated one time slot. On the other hand, in CDMA, all of the users share a single channel, and all the users of the system share that channel. A broadcast signal is spread out over the entire bandwidth, that signal being encoded using *unique codes* known only to the receiver and transmitter. Thus, the basis for TDMA is the use of time slots for multiple access, which CDMA uses unique codes to allow for multiple access.

The Supplemental Office Action bases the rejections of independent claims 1 and 8, and the claims dependent thereon, on the incorrect assumption that Shiue actually teaches a CDMA system, which assumption seems to be based on the incorrect assumption that CDMA is just a kind of TDMA. Since, as was explained above, this is clearly not true, there is no basis for the rejection, as was pointed out in the previous response.

In fact, as was pointed out previously, the entirety of Shiue is directed to a system for establishing a *time* division multiple access (TDMA) link over a shared channel with a base unit via a base transceiver. Thus, Shiue does *not* teach or suggest use of code division multiple access, and indeed *exclusively* teaches a completely different type of system.

In fact, the advantageous feature of Shiue is related to the very characteristic that distinguishes TDMA, that is, the use of time slices for multiplexing. As may be seen for example at col. 4, lines 54 et seq., Shiue's invention saves power in a TDMA system by shutting down power to certain hardware components during portions of the TDMA epoch other than the receiver's own *time slice*. Thus, the invention of Shiue takes advantage of the time slice characteristic of TDMA, which does not exist in CDMA, a scheme that does not allocate access by time slices, as discussed above.

It is not understood how the Action can take the position that the Shiue system is a CDMA system when it is clear from the description, claims, object and advantages of the Shiue patent that it strictly for use in TDMA, and takes advantages of the particular characteristics of that type of system. Further, as was pointed out above, TDMA is not the same as CDMA, nor is CDMA some sort of subset of TDMA, as the Supplemental Office Action seems to imply. In view of the above, if this rejection is to be maintained, the Examiner is requested to supply an affidavit showing that TDMA systems are in fact really CDMA systems, despite the well-known differences between these types of systems.

For at least the foregoing reason, the Office Action has completely failed to set forth a *prima facie* case of obviousness against independent claims 1 and 8.

Moreover, as was pointed out in the previous response, and for at least the foregoing reasons, there would have been no motivation to make the combination proposed in the Office Action since Komatsu and Kaku are directed to CDMA and not TDMA, whereas Shiue is directed to TDMA. Thus, no one would have thought to combine the features of

Komatsu and Kaku's CDMA systems with those of the TDMA system of Shiue, and the combination is thus improper in any event, especially in view of the fact that the Shiue's invention takes advantage of the very difference between TDMA and CDMA to allow for reduced power consumption.

Further, there would be no expectation of the success of the combination based on the fact that the elements combined in the rejection are from completely different types of devices. For at least these additional reasons, the rejection is improper and such be withdrawn.

The rejection of claim 21 also relies upon Shieu as the primary reference, again incorrectly stating that Shieu relates to CDMA, and is improper for the same reasons delineated above with respect to claims 1 and 8.

Claim 15 is directed to an automatic frequency controlling method in a code division multiple access system using a spectrum spreading technique which has a frame format in which pilot symbols and data symbols are time multiplexed for transmission and in which a variable transmission symbol rate is realized by making a spreading rate variable under a constant chip rate. The method comprises: in-phase summing in at least two different in-phase summation rates the pilot symbols having a complex vector expression over a predetermined length of a symbol interval after converting the pilot symbols into the complex vector expression by canceling a data modulated component of the pilot symbols; and estimating a frequency offset based on a result of conjugate complex multiplication of a plurality of the complex vector expressions which are subjected to the in-phase addition.

The Office Action appears to take the position that these features were disclosed in Komatsu. However, among the features of claim 15 not taught or suggested in Komatsu is in-phase summing, in at least two different in-phase summation rates, the pilot symbols having a complex vector expression over a predetermined length of a symbol interval after converting

the pilot symbols into the complex vector expression by canceling a data modulated component of the pilot symbols.

Element 22, 25 and 26 of Komatsu, relied upon in the Office Action for allegedly teaching this feature, are nowhere described as having all of recited features. The other references do not remedy this deficiency of Komatsu as a reference against claim 15. The Office Action is not clear, but seems to imply that Sato may remedy this deficiency, without actually indicating that Sato is being relied upon. However, Sato contains no teaching of *in-phase summing*, in at least two different in-phase summation rates, the pilot symbols having a complex vector expression over a predetermined length of a symbol interval after converting the pilot symbols into the complex vector expression by canceling a data modulated component of the pilot symbols. The fact that Sato may teach an in-phase and orthogonal components, does not remedy the deficiency of Sato with regard to this feature. For at least this reason, no prima facie case of obviousness has been made against claim 15. Accordingly, claim 15 is believed patentable over the cited references.

The rejection of claim 18 is similarly deficient as to any teaching of the recited in-phase summing section that in-phase sums in at least two different manners the complex vector expressions of the pilot symbols over a predetermined length of the symbol section. There is no description in Komatsu of any element performing all of the recited functions. Certainly elements 6, 22, 25 and 26 do not teach these features. The other references, including Sato, do not remedy this deficiency of Komatsu as a reference against claim 18. For at least this reason, no prima facie case of obviousness has been made against claim 18. Accordingly, claim 18 is believed patentable over the cited references.

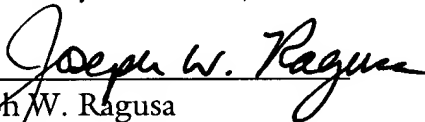
The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the

invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the above, each of the claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

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Respectfully submitted,

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